

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A load bearing arrangement for use with a work machine of the type having a platform, comprising:
~~at least one~~ a first load bearing member structured and arranged for coupling to the platform;
a second load bearing member structured and arranged for coupling to the first load bearing member;
said second load bearing member having an end comprising a material having a first yield strength;
an aperture formed in said end and having an aperture wall;
at least one support member contained within said aperture adjacent to at least a portion of said aperture wall, said support member having an opening sized to receive a bearing; and
said support member having a second yield strength greater than said first yield strength.

2-3. (Canceled)

4. (Original) The load bearing arrangement as set forth in claim 1 wherein said support member is laser welded to said end.

5. (Currently Amended) The load bearing arrangement as set forth in claim 1 wherein said the first load bearing member comprises:

at least one top plate;

at least one bottom plate; and

at least one pair of spaced apart side plates each attached to said top plate and said bottom plate.

6. (Original) The load bearing arrangement as set forth in claim 5 wherein said top plate comprises at least one integral mounting structure.

7. (Currently Amended) The load bearing arrangement as set forth in claim 5 further comprising:

a substantially cylindrical attachment structure extending from at least one of said pair of side plates; and

wherein said at least one of said pair of side plates is attached to said attachment structure.

8. (Currently amended) The load bearing arrangement as set forth in claim 7 wherein:

said first load bearing member has a transverse width; and

said attachment structure spans said transverse width.

9. (Currently Amended) The load bearing arrangement as set forth in claim 5 further comprising at least one reinforcing structure attached to at least one of said pair of side plates.

10. (Original) The load bearing arrangement as set forth in claim 9 wherein said reinforcing structure comprises:

a base portion; and

a rib portion extending from said base portion.

11. (Currently Amended) The load bearing arrangement as set forth in claim 9 wherein said reinforcement structure is laser welded to said at least one of said pair of side plates.

12. (Currently Amended) ~~The load bearing arrangement as set forth in claim 1 wherein A load bearing arrangement for use with a work machine of the type having a platform, comprising:~~

at least one load bearing member structured and arranged for coupling to the platform, wherein

said load bearing member comprises a first side and a second side;

one of said first side or said second side comprises a plurality of side plates;

each said side plate having a centerline axis; and

at least two adjacent side plates, each having a different thickness, on one of said first side or said second side are coupled together such that said centerline axis of each said side plate are colinear.

13. (Currently Amended) The load bearing arrangement as set forth in claim 1 further comprising an attachment pivotally coupled to said first bearing member.

14. (Original) The load bearing arrangement as set forth in claim 13 wherein said attachment comprises a bucket.

15. (Currently Amended) A load bearing arrangement for use with a work machine of the type having a platform, comprising:

a plurality of pieces connectable to form a load bearing member structured and arranged for pivotal attachment to the platform; and

a weldment connecting at least two of said pieces; and,
~~at least one~~ said weldment being simulated for effects of heat on at least one of said pieces subject to said weldment before said weldment is constructed.

16. (Original) The load bearing arrangement as set forth in claim 15 wherein said effects are at least one of stress and deformation.

17. (Previously Amended) The load bearing arrangement as set forth in claim 15, further comprising:

an end attached to said load bearing member and comprising a material having a first yield strength;

an aperture formed in said end and having an aperture wall;

at least one support member contained within said aperture adjacent to at least a portion of said aperture wall; and

said support member having a second yield strength greater than said first yield strength.

18. (Original) The load bearing arrangement as set forth in claim 17 wherein said support member comprises a substantially cylindrical structure having a through opening.

19. (Original) The load bearing arrangement as set forth in claim 18 further comprising a bearing received in said opening.

20. (Original) The load bearing arrangement as set forth in claim 18 wherein said support member is laser welded to said end.

21. (Previously Amended) The load bearing arrangement as set forth in claim 15 wherein said load bearing member comprises:

at least one top plate;

at least one bottom plate; and

at least one pair of spaced apart side plates each attached to said top plate and said bottom plate.

22. (Original) The load bearing arrangement as set forth in claim 21 wherein said top plate comprises at least one integral mounting structure.

23. (Currently Amended) The load bearing arrangement as set forth in claim 21 further comprising:

a substantially cylindrical attachment structure extending from at least one of said pair of side plates; and

wherein said at least one of said pair of side plates is attached to said attachment structure.

24. (Previously Amended) The load bearing arrangement as set forth in claim 23 wherein:

said load bearing member has a transverse width; and

said attachment structure spans said transverse width.

25. (Currently Amended) The load bearing arrangement as set forth in claim 21 further comprising at least one reinforcing structure attached to at least one of said pair of side plates.

26. (Original) The load bearing arrangement as set forth in claim 25 wherein said reinforcing structure comprises:

a base portion; and

a rib portion extending from said base portion.

27. (Currently Amended) The load bearing arrangement as set forth in claim 25 wherein said reinforcement structure is laser welded to said at least one of said pair of side plates.

28. (Previously Amended) The load bearing arrangement as set forth in claim 15 wherein:

said load bearing member comprises a first side and a second side;

one of said first side or said second side comprises a plurality of side plates;

each said side plate having a centerline axis; and

at least two adjacent side plates, each having a different thickness, on one of said first side or said second side are coupled together such that said centerline axis of each said side plate are colinear.

29. (Original) The load bearing arrangement as set forth in claim 15 further comprising an attachment pivotally coupled to said member.

30. (Original) The load bearing arrangement as set forth in claim 29 wherein said attachment comprises a bucket.

31. (Currently Amended) A load bearing apparatus, comprising:

a work machine having a platform;

at first member, having a longitudinal axis, coupled to said platform;

a first movement means for moving said first member relative to said platform;

a second member, having a longitudinal axis, pivotally coupled to said first member;

a second movement means for moving said second member relative to said first member;

a plurality of pieces connectable to form at least one of said first and second members; and

a weldment connecting at least two of said pieces; and,

~~at least one~~ said weldment being simulated for effects of heat on at least one of said pieces subject to said weldment before said weldment is constructed.

32. (Original) The load bearing apparatus as set forth in claim 31 wherein said first and said second movement means comprises hydraulic cylinders.

33. (Original) The load bearing apparatus as set forth in claim 31 further comprising an attachment attached adjacent an end of said second member.

34. (Original) The load bearing apparatus as set forth in claim 31 wherein said attachment comprises a bucket.

35. (Original) The load bearing arrangement as set forth in claim 31 wherein said effects are at least one of stress and deformation.

36. (Withdrawn) A method of manufacturing a load bearing member, comprising a plurality of pieces, for use with a work machine, comprising the steps of:
forming the pieces;
connecting at least two of the pieces by a weldment; and
determining the effects of heat caused by the weldment on at least one of said pieces subject to said weldment.

37. (Withdrawn) The method as set forth in claim 36 wherein said forming step is performed by a thermal cutting process.

38. (Withdrawn) The method as set forth in claim 37 wherein said thermal cutting process is laser cutting.

39. (Withdrawn) The method as set forth in claim 36 wherein forming step includes a simulation step of simulating distortions of the pieces caused by said thermal cutting process.

40. (Withdrawn) The method as set forth in claim 36 wherein said welding process is a robotic process.

41. (Withdrawn) The method as set forth in claim 36 wherein said determining step includes the steps of:

- determining a model of a geometry of the material;
- defining a set of coordinates of elements and nodes of the geometry model for a finite element analysis mesh;
- delivering the finite element analysis mesh coordinates to a thermal analysis model, the thermal analysis model including an analytical solution model and a finite element analysis model;
- determining a thermal analysis of the welding process as a function of at least one of the analytical solution model and the finite element analysis model, the analytical solution model being adapted to provide a thermal history of the welding process for a global distortion analysis, and the finite element analysis model being adapted to provide a thermal history of the welding process for a detailed residual stress analysis;
- delivering the thermal history of the welding process to a structural analysis model; and
- providing a structural analysis of the welding process as a function of the thermal history.

42. (Withdrawn) The method as set forth in claim 36 wherein said determining step includes the steps of:

- determining a history annihilation model of a material being welded;
- determining a strain hardening model of the material being welded;

determining a three-dimensional virtual elements detection model of the material being welded; and

incorporating the above models into a constitutive model for the welding simulation.

43. (Withdrawn) The method as set forth in claim 36 wherein said determining step occurs during the creation of the weldment.

44. (Withdrawn) The method as set forth in claim 36 wherein said determining step occurs prior to the creation of the weldment.

45. (Withdrawn) The method as set forth in claim 36 wherein said effects are at least one of stress and deformation.

46. (Withdrawn) The method as set forth in claim 36 further comprising the step of modifying said connecting step to minimize the effects of the heat.

47. (New) A load bearing member in a load bearing arrangement for use with a work machine, comprising:

an end comprising a material having a first yield strength;

an aperture, having an aperture wall, formed in the end;

at least one support member comprising a material having a second yield strength, wherein the support member is contained within the aperture adjacent to at least a portion of said aperture wall; and

at least one bearing, pressure-fitted in the support member, structured to receive a pin.

48. (New) The load bearing member according to claim 47, wherein the support member is laser welded to the end.